

# PATENT COOPERATION TREATY

# PCT

10/591960

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>043844-0103</b>	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. <b>PCT/US2005/007708</b>	International filing date ( <i>day/month/year</i> ) <b>09 March 2005 (09.03.2005)</b>	Priority date ( <i>day/month/year</i> ) <b>09 March 2004 (09.03.2004)</b>
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237.		
Applicant <b>LEDEEP, LLC</b>		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).
2. This REPORT consists of a total of 6 sheets, including this cover sheet.  
  
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application
4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	Date of issuance of this report <b>13 September 2006 (13.09.2006)</b>  Authorized officer <p style="text-align: center; font-weight: bold;">Beate Giffo-Schmitt</p> e-mail: pt03@wipo.int
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 24 OCT 2005

WIPO

PCT

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:  
STEPHEN B. MAEBIUS  
FOLEY & LARDER LLP  
WASHINGTON HARBOUR  
3000 K STREET, NW, SUITE 500  
WASHINGTON, DC 20007-5143

Date of mailing  
(day/month/year) **21 OCT 2005**

Applicant's or agent's file reference

043844-0103

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US05/07708

International filing date (day/month/year)

09 March 2005 (09.03.2005)

Priority date (day/month/year)

09 March 2004 (09.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): A61N 5/06 and US Cl.: 128/898; 607/088

Applicant

LEDEEP, LLC

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
Facsimile No. (571) 273-3201

Date of completion of this opinion  
23 September 2005 (23.09.2005)

Authorized officer  
Henry M. Johnson, III  
Telephone No. 571-272-4768

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/07708

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- ☐ paid additional fees
  - ☐ paid additional fees under protest and, where applicable, the protest fee
  - ☐ paid additional fees under protest but the applicable protest fee was not paid
  - ☒ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
See the lack of unity section of the International Search Report (Form PCT/ISA/210)

4. Consequently, this opinion has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-12

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US05/07708

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-12</u>	YES
	Claims <u>NONE</u>	NO
Inventive step (IS)	Claims <u>6, 10 and 12</u>	YES
	Claims <u>1-5, 7-9 and 11</u>	NO
Industrial applicability (IA)	Claims <u>1-12</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-5, 7 and 8 lack an inventive step under PCT Article 33(3) as being obvious over U.S. Patent 4,469,102 to Fish in view of U.S. Patent Application 2003/0034486 to Korgel et al. Fish teaches an enclosure with sources of ultraviolet light with a wavelength of 320 to 400 nanometers for irradiating a person in the enclosure. Fish does not disclose the use of nanoparticle light sources. Korgel et al. disclose light emitting nanoparticles and applications for their use. LED's using nanoparticles are disclosed emitting ultraviolet radiation in a wavelength of 350 to 500 nanometers (paragraph 0017). Korgel et al. teaches the nanoparticles may be excited using light at a wavelength from 350 to 1000 nanometers and further teaches the output wavelength varies with the excitation wavelength. The nanoparticles are disclosed as being in the range of 10-200 angstroms in diameter and that the structure may be that of nanowires. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the nanoparticle UV light source as taught by Korgel et al. in the invention of Fish to provide the desired wavelength of radiation.

Claims 9 and 11 lack an inventive step under PCT Article 33(3) as being obvious over U.S. Patent 4,469,102 to Fish in view of U.S. Patent Application 2003/0034486 to Korgel et al. and further in view of U.S. Patent Application 2002/0161418 to Wilkens et al. Fish and Korgel et al. are discussed above, but do not teach methods for treating lupus. Wilkens et al. teaches treatment of lupus by irradiation with light with a wavelength of 400 to 500 nanometers. Wilkens et al. does not disclose the use of nanoparticles as a light source or a treatment chamber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the devices of Fish and Korgel et al. in the methods of Wilkens et al. as alternative UV light sources.

Claim 6 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a treatment chamber providing UV light provided by nanoparticles arranged in two layers to provide specific treatment wavelengths.

Claims 10 and 12 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a lupus treatment method of providing UV light provided by nanoparticles by exciting with a first wavelength to provide a second output wavelength and varying the wavelength during the treatment.

Claims 1-12 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US05/07708

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claim 11 is objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because the claim is indefinite for the following reason(s): the term "the chamber" in the claim lacks antecedent basis in the base claim.